

CRYSTAL UNITS

CRYSTAL UNITS FOR MICROPROCESSOR (NR-18)

■ Features

- NR-18 crystal units can provide a great number of standard frequencies and have a wide range of applications. In addition, tapping type and gull-wing type are available for automatic mounting.



■ Specification

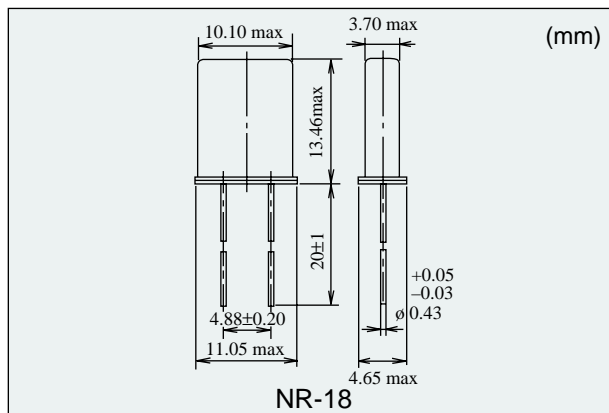
Frequency Range	Table 5 (NR-18)
Overtone	Table 5 (NR-18)
Temperature Characteristics	$\pm 50 \times 10^{-6}$
Operating Temp. Range	-10 ~ +60°C
Frequency Tolerance	$\pm 50 \times 10^{-6}$ (at 25°C)
Equivalent Series Resistance	Table 5 (NR-18)

Measuring Circuit: CI Meter

	Fundamental	3rd Overtone
Drive Level	50 μ W (1000 μ W max)	500 μ W (1000 μ W max)
Standard Load Capacitance	16pF	Series

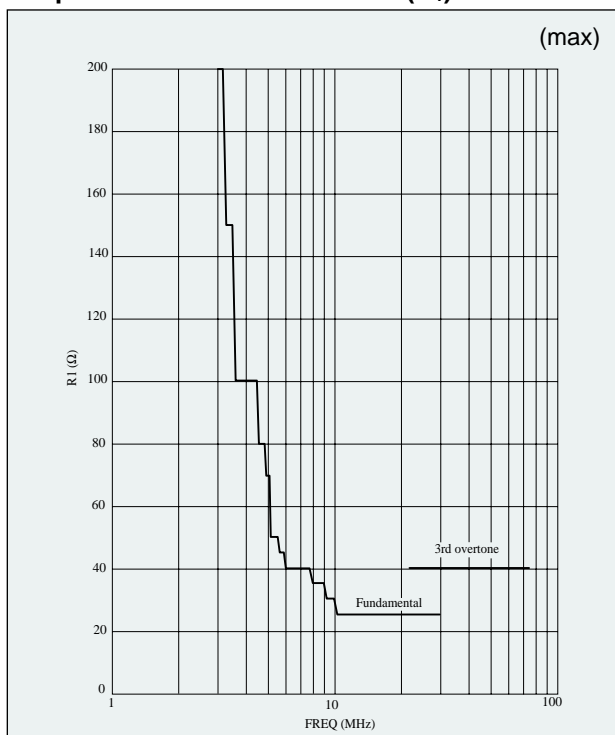
Standard load capacitance may vary depending on the frequency.

● Dimensions

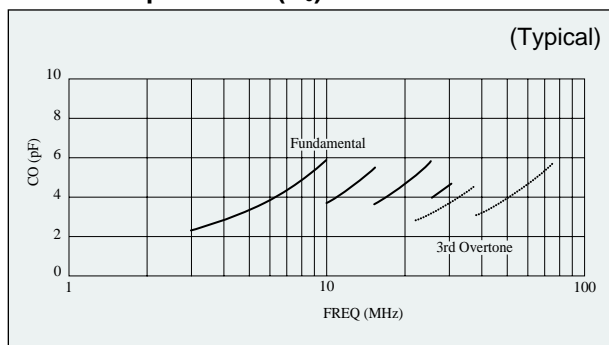


■ Technical Guidance (NR-18)

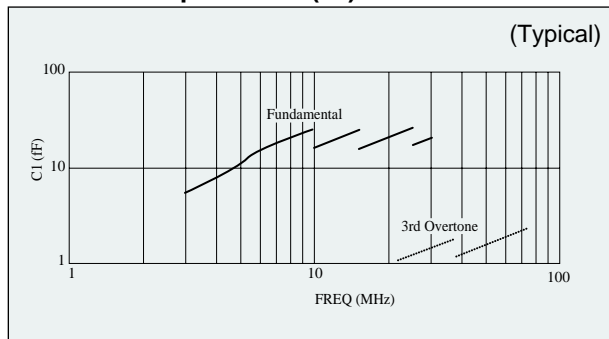
● Equivalent Series Resistance (R_1)



● Shunt Capacitance (C_0)



● Motional Capacitance (C_1)



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■ Table 5
Standard Frequencies and Specifications (NR-18)

<Fundamental>

Standard Frequency (MHz)	
3.000	8.388608
3.072	8.4672
3.120	8.6436
3.146024	8.775
3.1884	8.867238

3.200	9.000
3.2764	9.216
3.2768	9.600
3.330	9.800
3.4944	10.000

3.500	10.200-10.500
3.515	10.600
3.541	10.700-11.000
3.546894	11.0592
3.557837	11.880

3.575611	11.9808
3.579545	11.98135
3.582056	12.000
3.600	12.2
3.601	

3.6864	*1
3.79545	
3.840	
3.900952	
3.932160	

3.975	*1
3.9936	
4.000	
4.032	
4.096	

4.14	30.000
4.194304	
4.296503	
4.332	
4.433619	

4.500	
4.608	
4.78272	
4.800	
4.9152	

5.000	
5.0688	
5.120	
5.185	
5.5296	

5.700	
5.7143	
5.760	
6.000	
6.144	

6.176	
6.250	
6.400	
6.5536	
7.000	

7.15909	
7.162109	
7.200	
7.300	
7.3728	

7.500	
7.600	
8.000	
8.192	
8.388	

<3rd overtone>

Standard Frequency (MHz)	
22.000	
*2	
	60.000
	61.250
62.305	

67.7376	
70.000	
71.700	
75.875	

<5th overtone>

Standard Frequency (MHz)	
60.4256	
62.3067	
65.050	
70.000	
73.9944	

75.000	
76.2875	
78.4667	
79.865	
80.550	

81.050	
81.745	
82.285	
82.655	
84.000	

84.672	
85.700	
86.400	
89.750	
91.555	

94.556	
95.325	
98.325	
98.550	
100.000	

104.550	
105.7342	
115.000	
118.700	
122.912	

122.880	
130.000	
132.000	

<Equivalent Series Resistance (Ω)>

Overtone	Standard Frequency (MHz)	Equivalent Series Resistance (Ω)
Fundamental	3.0~3.2	200max
	3.2~3.5	150max
	3.5~4.6	100max
	4.6~4.9	80max
	4.9~5.1	70max
	5.1~5.7	50max
	5.7~6.0	45max
	6.0~8.0	40max
	8.0~9.0	35max
	9.0~10.0	30max
	10.0~30.0	25max
3rd overtone	22.0~76.0	40max
5th overtone	60.0~132.0	80max

*1 All frequencies from 12.2 to 30.0 MHz can be manufactured.

*2 All frequencies from 22 to 60 MHz (3rd Overtone) can be manufactured.